

### **REMARKS**

This is in response to the Office Action dated December 11, 2003. Claims 1-6, 8-18, 21-22, 24-28, 30-33 and 41-58 are pending.

The only claim change herein is to claim 30, which has been amended to address the Examiner's Section 112 concern. This amendment should thus be entered.

Applicant notes with appreciation the courtesy extended by the Examiner during the interview held at the USPTO on February 24, 2004. The substance of the interview is set forth below, in the remarks section of this filing.

Patentability can be shown in numerous ways, including via (1) unexpected results, or (2) showing that the cited art teaches away from the claimed invention. E.g., *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990); and *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997). Although only one of these showings is sufficient to evidence patentability, applicant herein has shown *both* unexpected results and that the cited art teaches away from the invention thereby strongly evidencing the patentable nature of the instant invention.

#### **Claim 1**

Claim 1 stands rejected under 35 U.S.C. Section 103(a) as being allegedly unpatentable over Zmely in view of Arbab. This Section 103(a) rejection is respectfully traversed for at least the following reasons.

Claim 1 requires "b) a zinc oxide inclusive contact layer; c) a silver inclusive layer contacting the zinc oxide inclusive layer b); d) a nickel chrome oxide inclusive layer contacting the silver inclusive layer c)." In other words, claim 1 requires that the layer comprising silver must be located between and contacting a lower contact layer b) comprising zinc oxide and an upper contact layer d) comprising nickel chrome oxide. For example, see Fig. 1 which illustrates a sequence of glass . . . ZnO<sub>x</sub>/Ag/NiCrO<sub>x</sub>.

A) Unexpected Results re claim 1

*Unexpected results* of relating to a combination of durability, transmission and sheet resistance are associated with the invention of claim 1. In particular, it has unexpectedly been found that the **combination** of a sequence of layers comprising ZnO<sub>x</sub>/Ag/NiCrO<sub>x</sub> in this order going away from a substrate results in a coated article that has a combination of high transmission, low sheet resistance and improved durability compared to the cited art. For example, see the instant specification at paragraph [22].

Stated another way, it has unexpectedly been found that when sandwiching a layer comprising Ag between layers comprising ZnO and NiCrO<sub>x</sub>, a coated article results which has an improved combination of transmission, sheet resistance and durability compared to the cited art. This will be explained below.

Neither Zmelyt nor Arbab disclose or suggest an Ag inclusive layer sandwiched between and contacting a layer comprising zinc oxide and a layer comprising nickel chrome oxide.

Zmely discloses a layer sequence of glass . . .  $\text{ZnO}_x/\text{Ag}/\text{TiO}_x$ . However, coated articles of Zmely in this regard are very problematic with regard to durability when exposed to common tests such as HCl tests. It has unexpectedly been found that by replacing the titanium oxide upper contact layer of Zmely with a layer comprising nickel chrome oxide, significantly improved durability can be achieved compared to the articles of Zmely. Stated another way, the *combination* of layers comprising the materials  $\text{ZnO}_x/\text{Ag}/\text{NiCrO}_x$  (an example of claim 1) has unexpectedly been found to allow for an improved combination of transmission/sheet resistance/durability compared to the cited art. It is the combination of these three materials that is believed to be responsible for the unexpected results.

Given the unexpected results shown above, any alleged Section 103(a) modification to Zmely (in view of Arbab) is overcome. The unexpected results evidence the patentable nature of the invention of claim 1. There is absolutely nothing in the cited art which would have led one of ordinary skill in the art to believe that replacing Zmely's titanium oxide layer with a layer comprising  $\text{NiCrO}_x$  would lead to such unexpected results.

#### B) Cited Art Teaches Away

Additionally, as discussed at the interview, Arbab teaches directly away from the invention of claim 1. The Office Action cites Arbab for the teaching of a "nickel-chromium alloy" primer layer (col. 1, lines 57-62). However, the point of Arbab's invention is that such layers are problematic and not desirable. In particular, Arbab

explains at column 2 that such layers are undesirable and have significant "drawbacks" for a number of reasons. For example, Arbab explains, *inter alia*, that (a) residual metal primer from such layers is undesirable, (b) controlling the thickness of such metal primer layers is difficult and complex, (c) the need for a discrete oxygen-free coating zone in the coater for such a layer is wasteful, and that (d) such primer layers can cause undesirable haze (col. 2, lines 14-55).

In view of these problems expressed by Arbab with respect to NiCr based layers, *Arbab explains that "it would be advantageous to provide a coating . . . without the need of conventional metal primer layers [i.e., NiCr layers]"* (col. 2, lines 53-57).

Accordingly, it can be seen that Arbab expressly teaches that NiCr based layers are not to be used (instead, Arbab uses a ceramic layer). In view of Arbab's teaching that NiCr based layers should not be used, one of ordinary skill in the art would never have used such layers in Zmelty as alleged in the final rejection because to do so would be directly contrary to Arbab's teaching. The Section 103(a) rejection is flawed in this respect, and should be withdrawn.

#### Other Example Claims

The other independent claims are also respectfully submitted to patentably define over the cited art in view of the (a) unexpected results, and (b) teaching away of the cited art.

For example, claim 11 calls for "a lower contact layer comprising zinc oxide; an infrared (IR) reflecting layer comprising silver contacting the lower contact layer

comprising zinc oxide; an upper contact layer comprising at least one of an oxide of nickel, an oxide of chromium, and nickel chrome oxide which contacts the IR reflecting layer comprising silver." The cited art fails to disclose or suggest this claimed subject matter of claim 11. Moreover, the unexpected results associated with the same overcome any alleged Section 103(a) modification to Zmely. Also, as explained above, Arbab teaches directly away from the claim in this regard, rendering the alleged Section 103(a) combination incorrect.

Claim 17 requires that "the pair of contact layers sandwiching the first IR reflecting layer therebetween includes a lower contact layer and an upper contact layer, and wherein the first IR reflecting layer includes Ag, wherein the lower contact layer comprises zinc aluminum oxide and is located between the first IR reflecting layer and the substrate, and the upper contact layer comprises an oxide of NiCr." Again, the cited art fails to disclose or suggest this claimed subject matter of claim 17. Moreover, the unexpected results associated with the same overcome any alleged Section 103(a) modification to Zmely. Too, as explained above, Arbab teaches directly away from the claim in this regard, rendering the alleged Section 103(a) combination incorrect.

Claim 21 requires "an infrared (IR) reflecting layer sandwiched between and contacting first and second contact layers; and wherein the first contact layer includes zinc oxide and the second contact layer comprises nickel-chrome oxide." Again, the cited art fails to disclose or suggest this claimed subject matter of claim 21. Moreover, the unexpected results associated with the same overcome any alleged Section 103(a)

modification to Zmelty. Also, as explained above, Arbab teaches directly away from the claim in this regard, rendering the alleged Section 103(a) combination incorrect.

Claim 41 requires "b) a layer comprising zinc oxide; c) a layer comprising silver located over and contacting the layer b) comprising zinc oxide; d) a layer comprising an oxide of nickel chrome located over and contacting the layer c) comprising silver." The cited art fails to disclose or suggest this claimed subject matter of claim 41. Moreover, the unexpected results associated with the same overcome any alleged Section 103(a) modification to Zmelty. Also, as explained above, Arbab teaches directly away from the claim in this regard, rendering the alleged Section 103(a) combination incorrect.

Claim 48 requires "b) a layer comprising zinc oxide; c) a layer comprising silver located over and contacting the layer b) comprising zinc oxide; d) a layer comprising an oxide of at least one of Ni and Cr located over and contacting the layer c) comprising silver." The cited art fails to disclose or suggest this claimed subject matter of claim 48. Moreover, the unexpected results associated with the same overcome any alleged Section 103(a) modification to Zmelty. Also, as explained above, Arbab teaches directly away from the claim in this regard, rendering the alleged Section 103(a) combination incorrect.

Claim 50 requires "b) a zinc oxide inclusive contact layer; c) a silver inclusive layer contacting the zinc oxide inclusive layer b); d) a layer comprising an oxide of NiCr contacting the silver inclusive layer c)." The cited art fails to disclose or suggest this claimed subject matter of claim 50. Moreover, the unexpected results associated with the same overcome any alleged Section 103(a) modification to Zmelty. Also, as explained

above, Arbab teaches directly away from the claim in this regard, rendering the alleged Section 103(a) combination incorrect.

Claim 55 requires "an infrared (IR) reflecting layer comprising silver sandwiched between and contacting first and second contact layers; and wherein the first contact layer is under the layer comprising silver and comprises zinc oxide, and the second contact layer is over the layer comprising silver and comprises nickel-chrome oxide." The cited art fails to disclose or suggest this claimed subject matter of claim 55. Moreover, the unexpected results associated with the same overcome any alleged Section 103(a) modification to Zmelty. Also, as explained above, Arbab teaches directly away from the claim in this regard, rendering the alleged Section 103(a) combination incorrect.

#### Conclusion

For at least the foregoing reasons, it is respectfully requested that all rejections be withdrawn. All claims are in condition for allowance. If any minor matter remains to be resolved, the Examiner is invited to telephone the undersigned with regard to the same.

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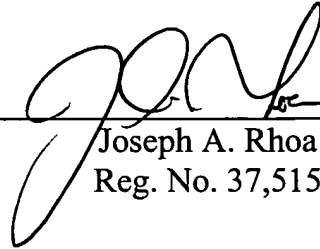
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Respectfully submitted,

**NIXON & VANDERHYE P.C.**

By: \_\_\_\_\_

A handwritten signature in black ink, appearing to read 'JAR', is written over a horizontal line. The signature is fluid and cursive.

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